

Rocks ▪ *Review and Reinforce*

Metamorphic Rocks

Understanding Main Ideas

Fill in the blanks in the flowchart below.

Collisions between Earth's plates push rock down toward the heat of Earth's 1. _____. ➡ As the rock is buried deeper in the crust, 2. _____ also increases on the rock. ➡ The rock is squeezed so tightly that the 3. _____ of the rock change, creating metamorphic rock.

Answer the following questions in the spaces provided.

4. Describe a situation in which heat can change rock to metamorphic rock.

5. What characteristic do geologists use to classify metamorphic rocks?

6. Describe how quartzite forms.

7. Explain what characteristics make marble a useful metamorphic rock.

Building Vocabulary

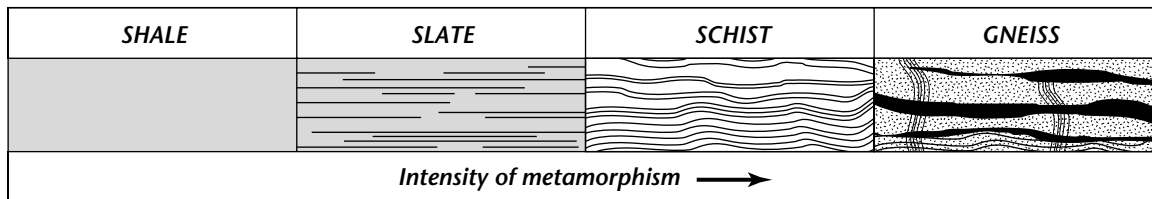
Classify each of the following metamorphic rocks by writing either Foliated or Nonfoliated in the blank beside it.

- _____ 8. marble
_____ 9. slate
_____ 10. gneiss

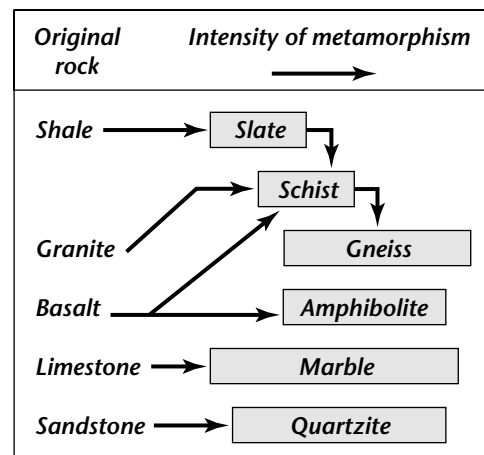
Rocks ▪ *Enrich*

The Metamorphic Rocks

Tremendous pressure and high temperatures can change any rock into metamorphic rock. This process often occurs near plate boundaries. There, pressure builds as one plate collides with another. In addition, hot magma flows upward into rock near these boundaries. Such intense conditions change one kind of rock into another, such as shale, a sedimentary rock, into slate, a metamorphic rock. But what happens if the pressure and temperature continue to increase after shale becomes slate? Look at Figure 1 below. Increasing pressure and temperature change the slate into schist, and the schist changes into gneiss.

**Figure 1**

Gneiss and schist are the most common metamorphic rocks. Gneiss is a foliated rock usually composed of quartz and feldspar. Schist is also foliated, but its mineral composition varies. The terms gneiss and schist actually describe certain textures of metamorphic rock. That's why both shale and granite can change into gneiss, and both granite and basalt can change into schist. Figure 2 shows common metamorphic rocks to the right. The rocks on the left are igneous and sedimentary rocks. The arrows represent the pressure and temperatures that cause the formation of metamorphic rocks.

**Figure 2**

Answer the following questions on a separate sheet of paper.

1. What causes shale to change into slate?
2. What happens to the slate if these conditions increase?
3. What are gneiss and schist?
4. How do tremendous pressures and high temperatures affect limestone?
5. How does metamorphism affect basalt?
6. What rocks can change into schist?
7. How does increased metamorphism affect schist?